

54, E. 81. St., N. Y.

Oct. 19th, 1878.

My dear Dr. Gray,

On pages 62, 170, Vol. VI.
of Bulletin I have given pretty
much all I know about
Pontederia cordata.

This plant is truly trimor-
phic, and the account given
of the trimorphic *Pontederia* of
Southern Brazil in Darwin's
"Different Forms of Flowers", pp. 185-7,
American edition, though vastly
fuller and more accurate
than my observations, covers hands
sufficiently well to serve for
our species.

There are three forms
of the plant, generally found
in different clumps. In one, the

stigma is raised on a long style to the top of the flower; in the second, the stigma reaches the middle of the flower or top of the tube; in the third, the style is very short and the stigma, accordingly is at the bottom of the tube. The long styled stigma is plainly cut into six linear segments, the others are very obscurely lobed, if at all. There are six stamens, divided into two sets of three each. In the long styled form, one set of anthers occupies the top of the tube and another the bottom, i.e., the two positions respectively occupied by the stigma in the other forms. In the mid-styled form, in the same way, the anthers occupy the two positions not held by the stigma, viz. the top

of the flower and the bottom of the tube; and so again in the the short styled form, the anther sets are at the top and middle of the flower.

The pollen of the long stamens is about twice the diameter of that of the short; and that of the mid-stamens intermediate in size. I have not ascertained whether, as in the case of the Brazilian plant, there is a difference in the size of the pollen grains of the ~~different~~ different sets of middle anthers.

The spike of *Pontederia cordata* is compound and produces a great number of flowers. The spike begins to flower at

the base, but, as the flowers
 (about 3) of the spikelet likewise
 develop successively, ^{in the} ~~closest~~ ^{and they} ~~flowers~~ ^{mature}
 and buds may be found all a-
 long the spike when in full
 bloom, giving it a somewhat
 ragged appearance. The flowers
 wither up on being fertilized, but other-
 wise merely dry up as they stand open.
 In the latter case, ^{of which} ~~which~~ ^{generally} ~~though~~
 every spike presents examples, there
 may be some accidental defects
 in the organs, or ^{the flower} ~~it~~ ~~may~~ ~~have~~
 been left dependent on its own
 pollen, which if it reached the
 stigma would yet be impotent.
 That the latter is the general
 explanation ^{seems to be} ~~is~~ confirmed by the
 infertility of some mid-styled
 plants that Mr. Müller had

F.

in his garden, with none of
the other forms near. Whenever ~~many~~^{the}
the spikes of *Pontederia coriata*
are found well in flower, many
of the flowers are already coil-
ed up, and when mature the
spikes are crowded with seeds
apparently mature: they must,
therefore, have had frequent vis-
its of insects. My opportunities
for watching them have been very
limited, but I am pretty sure
that I have seen bees at work
on them, and I have found the
wing of some small fly in one
of the closed up flowers.

I am ashamed not to have
done more towards investigating
the many interesting points of
Pontederia, I have hardly seen

the plant this Summer. I wonder
is the variety, *angustifolia* is
scarce because of some difference
in organization.

I see that Eichler in
his Flower Diagrams, p. 230-1,
quoting Payer recognizes the de-
doublement of the stamens in
Certanue. He seems to think
that *Leskea mexicana* (I should
like to see it) is a true *Leskea*.

In the matter of *Leskea*,
I find that the convolution
of the sepals is reversed with
every flower on the same twig;
i.e. if in the lower flower the right
side of the ~~inner~~ sepal overlaps
the next, in the flower next above
the left side overlaps &c; the bract
^{at} the base of the pedicel conforms

to this. Thus we have at least
three alternate torsion's 1st. flower;
~~combine with~~, second sepals; third
petals. I find the same in
Hypericum perforatum. Is
this an old story, and has
it an explanation? It seems
very hard to separate *Hypericum*
and *Helianthemum* & that set,
as Benthams & Hookers do, but
Eichler does not.

~~Mr.~~ Our old dear meeting
has discussed at Hunter's
Park, L. I. I believe a queer
plant, of which I enclose a
bit, hoping you will kindly
tell us its name. I don't

think I have it in my
books. They have been find-
ing a *Communi-fac* quite
a number of introduced plants
as you will see in the Bulle-
tin in a day or two. Mr.
Meehan has investigated the
Calluna of New Jersey, and
pronounces it introduced.

Yrs truly,

Wm. H. Lytle